

THAT WHICH IS CLAIMED:

1. A fiber optic cable comprising:

at least one non-jacketed bundle of optical fibers, each bundle of optical fibers comprising a plurality of optical fibers and at least one binder thread encircling the plurality of optical fibers to thereby maintain the plurality of optical fibers in the bundle, said at least one binder thread comprising an air entangled, textured, continuous multi-filament thread having no more than 25 twists per inch; and  
a cable jacket surrounding said at least one non-jacketed bundle of optical fibers.

2. A fiber optic cable according to Claim 1 wherein said at least one binder

thread comprises a looper thread and a needle thread that cooperate to encircle the plurality of optical fibers.

3. A fiber optic cable according to Claim 2 wherein said looper thread and said needle thread are secured to one another by a plurality of overlocked stitches.

4. A fiber optic cable according to Claim 1 wherein said at least one binder thread is formed of a synthetic thread that is resistant to bacterial decomposition.

5. A fiber optic cable according to Claim 4 wherein said at least one binder thread is formed of preshrunk polyester.

6. A fiber optic cable according to Claim 1 wherein said at least one binder thread has a finish that is inert with respect to those components of the fiber optic cable with which said at least one binder thread comes into contact.

7. A fiber optic cable according to Claim 6 wherein the finish is a silicone wax emulsion finish.

8. A fiber optic cable according to Claim 1 wherein said at least one binder thread has between 2 twists and 6 twists per inch.

9. A fiber optic cable according to Claim 1 wherein said at least one binder thread has a TEX number between 18 and 60.
10. A fiber optic cable according to Claim 9 wherein said at least one binder thread has a TEX number between 30 and 40.
11. A fiber optic cable according to Claim 1 wherein said at least one binder thread has a denier between 150 and 1000.
12. A fiber optic cable according to Claim 11 wherein said at least one binder thread has a denier of 250.
13. A fiber optic cable according to Claim 1 wherein said at least one binder thread is resistant to wicking.
14. A fiber optic cable according to Claim 1 wherein said at least one binder thread includes a super absorbant polymer.
15. A fiber optic cable according to Claim 1 wherein said at least one binder thread comprises indicia for uniquely identifying said bundle of optical fibers.
16. A fiber optic cable according to Claim 1 wherein said at least one binder thread encircles the plurality of optical fibers with a pitch between 10 mm and 70 mm.
17. A fiber optic cable according to Claim 16 wherein said at least one binder thread encircles the plurality of optical fibers with a pitch of 50 mm.
18. A fiber optic cable according to Claim 1 further comprising a separation element for preventing adhesion between said at least one non-jacketed bundle of optical fibers and said cable jacket.
19. A fiber optic cable according to Claim 18 wherein said separation element comprises a separation layer disposed within said cable jacket and surrounding said at least one non-jacketed bundle of optical fibers.

20. A fiber optic cable according to Claim 18 wherein said separation element comprises a surface coating on said at least one non-jacketed bundle of optical fibers.

21. A fiber optic cable comprising:

at least one non-jacketed bundle of optical fibers, each bundle of optical fibers comprising a plurality of optical fibers and at least one binder thread encircling the plurality of optical fibers to thereby maintain the plurality of optical fibers in the bundle, said at least one binder thread having a silicone wax emulsion finish; and  
a cable jacket surrounding said at least one non-jacketed bundle of optical fibers.

22. A fiber optic cable according to Claim 21 wherein said at least one binder thread comprises an air entangled, textured, continuous multi-filament thread.

23. A fiber optic cable according to Claim 21 wherein said at least one binder thread comprises a looper thread and a needle thread that cooperate to encircle the plurality of optical fibers.

24. A fiber optic cable according to Claim 23 wherein said looper thread and said needle thread are secured to one another by a plurality of overlocked stitches.

25. A fiber optic cable according to Claim 21 wherein said at least one binder thread is formed of a synthetic thread that is resistant to bacterial decomposition.

26. A fiber optic cable according to Claim 25 wherein said at least one binder thread is formed of preshrunk polyester.

27. A fiber optic cable according to Claim 21 wherein said at least one binder thread has no more than 25 twists per inch.

28. A fiber optic cable according to Claim 27 wherein said at least one binder thread has between 2 twists and 6 twists per inch.

29. A fiber optic cable according to Claim 21 wherein said at least one binder thread has a TEX number between 18 and 60.

30. A fiber optic cable according to Claim 29 wherein said at least one binder thread has a TEX number between 30 and 40.

31. A fiber optic cable according to Claim 21 wherein said at least one binder thread has a denier between 150 and 1000.

32. A fiber optic cable according to Claim 31 wherein said at least one binder thread has a denier of 250.

33. A fiber optic cable according to Claim 21 wherein said at least one binder thread is resistant to wicking.

34. A fiber optic cable according to Claim 21 wherein said at least one binder thread includes a super absorbant polymer.

35. A fiber optic cable according to Claim 21 wherein said at least one binder thread comprises indicia for uniquely identifying said bundle of optical fibers.

36. A fiber optic cable according to Claim 21 wherein said at least one binder thread encircles the plurality of optical fibers with a pitch between 10 mm and 70 mm.

37. A fiber optic cable according to Claim 36 wherein said at least one binder thread encircles the plurality of optical fibers with a pitch of 50 mm.

38. A fiber optic cable according to Claim 21 further comprising a separation element for preventing adhesion between said at least one non-jacketed bundle of optical fibers and said cable jacket.

39. A fiber optic cable according to Claim 38 wherein said separation element comprises a separation layer disposed within said cable jacket and surrounding said at least one non-jacketed bundle of optical fibers.

40. A fiber optic cable according to Claim 38 wherein said separation element comprises a surface coating on said at least one non-jacketed bundle of optical fibers.

41. A fiber optic cable comprising:

at least one bundle of optical fibers, each bundle of optical fibers comprising a plurality of optical fibers and at least one binder thread encircling the plurality of optical fibers with a pitch between 10 mm and 70 mm to thereby maintain the plurality of optical fibers in the bundle, said at least one binder thread comprising an air entangled, textured, continuous multi-filament thread having no more than 25 twists per inch, a TEX number between 18 and 60 and a denier between 150 and 1000, said at least one binder thread also including a finish that is inert with respect to those components of the fiber optic cable with which said at least one binder thread comes into contact; and

a cable jacket surrounding said at least one bundle of optical fibers, a layer of strength members being generally interposed between said thread and said cable jacket.

42. A fiber optic cable according to Claim 41 wherein said at least one binder thread comprises a looper thread and a needle thread that cooperate to encircle the plurality of optical fibers.

43. A fiber optic cable according to Claim 42 wherein said looper thread and said needle thread are secured to one another by a plurality of overlocked stitches.

44. A fiber optic cable according to Claim 41 wherein said at least one binder thread is formed of a synthetic thread that is resistant to bacterial decomposition.

45. A fiber optic cable according to Claim 44 wherein said at least one binder thread is formed of preshrunk polyester.

46. A fiber optic cable according to Claim 41 wherein the finish is a silicone wax emulsion finish.

47. A fiber optic cable according to Claim 41 wherein said at least one binder thread has between 2 twists and 6 twists per inch.

48. A fiber optic cable according to Claim 41 wherein said at least one binder thread has a TEX number between 30 and 40.

49. A fiber optic cable according to Claim 41 wherein said at least one binder thread has a denier of 250.

50. A fiber optic cable according to Claim 41 wherein said at least one binder thread is resistant to wicking.

51. A fiber optic cable according to Claim 41 wherein said at least one binder thread includes a super absorbant polymer.

52. A fiber optic cable according to Claim 41 wherein said at least one binder thread comprises indicia for uniquely identifying said bundle of optical fibers.

53. A fiber optic cable according to Claim 41 wherein said at least one binder thread encircles the plurality of optical fibers with a pitch of 50 mm.

54. A fiber optic cable according to Claim 41 further comprising a separation element for preventing adhesion between said at least one bundle of optical fibers and said cable jacket.

55. A fiber optic cable according to Claim 54 wherein said separation element comprises a separation layer disposed within said cable jacket and surrounding said at least one bundle of optical fibers.

56. A fiber optic cable according to Claim 54 wherein said separation element comprises a surface coating on said at least one non-jacketed bundle of optical fibers.

57. A fiber optic cable comprising:

an inner bundle of optical fibers comprising a plurality of optical fibers and at least one binder thread encircling the plurality of optical fibers to thereby maintain the plurality of optical fibers in the bundle, each optical fiber of said inner bundle comprising indicia for providing unique identification of the respective optical fiber;

an outer non-jacketed bundle of optical fibers comprising a plurality of optical fibers positioned circumferentially about said inner bundle of optical fibers, each optical fiber of said outer bundle comprising indicia for providing unique identification of the respective optical fiber, said outer bundle of optical fibers further comprising at least

one binder thread encircling the plurality of optical fibers of said outer bundle to thereby maintain the plurality of optical fibers about said inner bundle of optical fibers; and  
a tubular member surrounding said outer non-jacketed bundle of optical fibers.

58. A fiber optic cable according to Claim 57 wherein said tubular member is a buffer tube such that said inner bundle, said outer bundle and said buffer tube collectively comprise a tube assembly, and wherein the fiber optic cable further comprises:

a central member;  
a plurality of tube assemblies extending along said central member; and  
a cable jacket surrounding said plurality of tube assemblies.

59. A fiber optic cable according to Claim 57 wherein each optical fiber of said inner and outer bundles has an associated color for uniquely identifying the optical fiber within the respective bundle of optical fibers.

60. A fiber optic cable according to Claim 57 wherein said at least one binder thread of at least one of said inner and outer bundles comprises an air entangled, textured, continuous multi-filament thread.

61. A fiber optic cable according to Claim 57 wherein said at least one binder thread of at least one of said inner and outer bundles comprises a looper thread and a needle thread that cooperate to encircle the plurality of optical fibers.

62. A fiber optic cable according to Claim 61 wherein said looper thread and said needle thread are secured to one another by a plurality of overlocked stitches.

63. A fiber optic cable according to Claim 57 wherein said at least one binder thread of at least one of said inner and outer bundles is formed of a synthetic thread that is resistant to bacterial decomposition.

64. A fiber optic cable according to Claim 57 wherein said at least one binder thread of at least one of said inner and outer bundles has a finish that is inert with respect

to those components of the fiber optic cable with which said at least one binder thread comes into contact.

65. A fiber optic cable according to Claim 57 wherein said at least one binder thread of at least one of said inner and outer bundles has no more than 25 twists per inch.

66. A fiber optic cable according to Claim 57 wherein said at least one binder thread of at least one of said inner and outer bundles has a TEX number between 18 and 60.

67. A fiber optic cable according to Claim 57 wherein said at least one binder thread of at least one of said inner and outer bundles has a denier between 150 and 1000.

68. A fiber optic cable according to Claim 67 wherein said at least one binder thread of at least one of said inner and outer bundles has a denier of 250.

69. A fiber optic cable according to Claim 57 wherein said at least one binder thread of at least one of said inner and outer bundles comprises indicia for uniquely identifying said bundle of optical fibers.

70. A fiber optic cable according to Claim 57 wherein said at least one binder thread of at least one of said inner and outer bundles encircles the plurality of optical fibers with a pitch between 10 mm and 70 mm.

71. A fiber optic cable according to Claim 57 further comprising a separation element for preventing adhesion between said at least one outer non-jacketed bundle of optical fibers and said tubular member.

72. A fiber optic cable comprising:

a central member;

a plurality of non-jacketed bundles of optical fibers extending along said central member, each bundle of optical fibers comprising a plurality of optical fibers and a binder encircling the plurality of optical fibers to thereby maintain the plurality of optical fibers in the bundle;

a cable jacket surrounding said plurality of bundles of optical fibers; and

a separation element for preventing adhesion between said plurality of bundles of optical fibers and said cable jacket without surrounding each bundle of optical fibers with a respective jacket.

73. A fiber optic cable according to Claim 72 wherein said separation element comprises a separation layer disposed within said cable jacket and surrounding said plurality of bundles of optical fibers.

74. A fiber optic cable according to Claim 73 wherein said plurality of optical fibers are tight buffered optical fibers having a tight buffer coating, and wherein said separation layer is formed of a material having a melting point that is greater than the respective melting points of said cable jacket and the tight buffer coating of said tight buffered optical fibers.

75. A fiber optic cable according to Claim 73 wherein said separation layer is selected from the group consisting of a polymeric layer, a layer at least partially formed of a water swellable material and a layer that includes strength elements.

76. A fiber optic cable according to Claim 72 wherein said separation element comprises a surface coating on each bundle of optical fibers.

77. A fiber optic cable according to Claim 76 wherein said plurality of optical fibers are tight buffered optical fibers having a tight buffer coating, and wherein the surface coating is comprised of a material having a melting point that is greater than the respective melting points of said cable jacket and the tight buffer coating of said tight buffered optical fibers.

78. A fiber optic cable according to Claim 72 wherein the binder of each bundle of optical fibers comprises a binder thread encircling about said plurality of optical fibers.

79. A fiber optic cable according to Claim 72 wherein the binder of each bundle of optical fibers comprises a polymer film.

80. A fiber optic cable according to Claim 79 wherein said plurality of optical fibers are tight buffered optical fibers having a tight buffer coating, and wherein the polymer film directly contacts the tight buffer coating of said tight buffered optical fibers.

81. A fiber optic cable according to Claim 79 wherein said plurality of optical fibers are tight buffered optical fibers having a tight buffer coating, and wherein the polymer film is comprised of a material having a melting point that is greater than the respective melting points of said cable jacket and the tight buffer coating of said tight buffered optical fibers.

82. A fiber optic cable according to Claim 81 wherein said separation element is also comprised of said polymer film.

83. A fiber optic cable according to Claim 72 wherein each bundle of optical fibers further comprises a central member about which said plurality of optical fibers are stranded.

84. A fiber optic cable according to Claim 83 wherein at least one of said binder and said central member of each bundle of optical fibers comprises indicia to identify the respective bundle of optical fibers.

85. A fiber optic cable comprising:

a plurality of non-jacketed bundles of optical fibers, each bundle of optical fibers comprising a plurality of optical fibers and a binder thread encircling the plurality of optical fibers to thereby maintain the plurality of optical fibers in the bundle;  
a separation layer surrounding said plurality of bundles of optical fibers;

and

a cable jacket surrounding said separation layer which prevents adhesion between said plurality of bundles of optical fibers and said cable jacket without surrounding each bundle of optical fibers with a respective jacket.

86. A fiber optic cable according to Claim 85 wherein said plurality of optical fibers are tight buffered optical fibers having a tight buffer coating, and wherein said separation layer is formed of a material having a melting point that is greater than the

respective melting points of said cable jacket and the tight buffer coating of said tight buffered optical fibers.

87. A fiber optic cable according to Claim 85 wherein said separation layer is selected from the group consisting of a polymeric layer, a layer at least partially formed of a water swellable material and a layer that includes strength elements.

88. A fiber optic cable according to Claim 85 wherein each bundle of optical fibers further comprises a central member about which said plurality of optical fibers are stranded.

89. A fiber optic cable according to Claim 88 wherein at least one of said binder and said central member of each bundle of optical fibers comprises indicia to identify the respective bundle of optical fibers.

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